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NOTES ON FOSSILS FROM THE UTICA FORMATION AT POINT-À-PIC, MURRAY RIVER, MURRAY BAY (QUE.), CANADA.

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Whilst preparing my paper "On the Utica Formation and its fossils in Canada" for the Royal Society meeting of last spring, a very interesting though small collection of fossils was kindly placed at my disposal by Mr. Walter F. Ferrier, who had obtained the same in the black bituminous shales which crop out along the shore on the Murray River near its mouth, holding a fauna pre-eminently Utica in its *facies.*

The numerous and interesting geological features of Murray Bay and its environs have in years gone by received much attention and elicited careful study at the hands of geologists, notably Sir William Dawson, Dr. Harrington, members of the Geological Survey staff, and others whose contributions form a valuable series of articles in the *Cana-*

dian Naturalist and elsewhere. (See Dawson in Can. Nat., vol. vi., p. 138, *et al. loc.*)

In the "Geology of Canada, 1863," the geology of that district is sketched out carefully with the accumulated evidence at the disposal of the writer (Sir Wm. Logan) at that time, but neither here nor elsewhere have I been able to find any record made of the occurrence of rocks belonging to the Utica formation at Murray Bay. This is my only plea for the present notes, which are hereby submitted as a humble contribution to the knowledge of the geological history of the locality in question.

From the papers already published, and the lists of fossils therein contained, both the Bird's Eye and Black River and the Trenton formations are known to be well developed and easily recognized among the Cambro-Silurian or Ordovician strata of Murray Bay.

Sir William Dawson has recorded the occurrence of *Ambonychia radiata* (Hall) along with species indicating a lower horizon than that species, but its presence may certainly point to the development of strata of less antiquity than the Trenton formation in that district, most of which have been long since removed, either (?) by glacial action or by other denuding agencies at work everywhere. No distinction has as yet been made here, I believe, between the Trenton measures holding a characteristic fauna and the Utica formation, which holds a fauna very similar to the rocks ofthe same age at Ottawa, Whitby, Collingwood, and other places where that formation is developed.

From these shales, which are black, bituminous, somewhat indurated and calcareous at times, holding numerous organic remains, the following species of fossils were obtained in a tolerably good state of preservation :

RHABDOPHORA.

1. Diplograptus sp. (resembling D. pristis, Hisinger).

POLYZOA.

2. Pachydictya sp.

Brachiopoda.

3. Leptobolus insignis, Hall.
4. Siphonotreta, sp.
5. Leptæna sericea, Sowerby.
6. Orthis testudinaria, Dalman, *var.*

Cephalopoda.

7. Trocholites ammonius, Conrad.
8. Endoceras proteiforme, Hall.

Trilobita.

9. Triarthrus sp. (?)
10. Calymene senaria, Conrad.

Ostracoda.

11. Leperditia (Primitia) cylindrica, Hall.
12. " " probably n. sp.

Notes on the above Fossils.

Rhabdophora.

1. **Diplograptus** sp.—A few broken and imperfectly preserved stipes of a diprionidian, or petaloid graptolite, whose specific relations cannot satisfactorily be ascertained with the specimens before me.

Polyzoa.

2. **Pachydictya** sp.—Several fronds of a species of this genus, or of a very closely related one, occur in the collection. They exhibit a considerably wide nonporiferous margin. The form in question may possibly fall under one of Mr. E. O. Ulrich's species, but which is not as yet definitely ascertained.

Brachiopoda.

3. **Leptobolus insignis**, Hall.—This species occurs in tolerable abundance in the collection, and is well preserved.

It is eminently characteristic of the Utica wherever that formation has been traced in its natural position overlying the Trenton formation in Canada and the United States; so that its presence at Murray Bay affords good evidence upon which to determine the geological horizon. The specimens from Murray Bay exhibit the radiating lines very well, showing no appreciable variation compared with Ottawa or Collingwood specimens.

4. Siphonotreta sp.—This is undoubtedly the most interesting and rarest form in the collection. A cursory examination of this form and the associated specimens was made some three years ago, but at that time it was considered and grouped along with the specimens of *Leptobolus insignis;* but a closer examination having been made last spring, it was found that the surface of the shell and other parts presented all the essential characters of a true *Siphonotreta* (de Verneuil). The specimen is preserved as a mould or cast of the shell, exhibiting the spines all around the outer margin and sides, and may possibly be a young individual of, or closely related to, *Siphonotreta Scotica* Davidson, a species recorded by Mr. J. F. Whiteaves in 1883 from the Utica formation in a paper read by him at the Montreal meeting of the A. A. A. S. Additional notes on that species were made by the writer in the "Ottawa Naturalist" for December, 1887, and in Vol. II. No. 3 of the Ottawa Field Naturalists' Club Transactions, No. 7, p. 347. The following notes are taken from the Murray Bay specimen, which is probably the larger value: Dimensions as follows:—*Length* of the shell, 1·75 millimetres; breadth, 1·8 millimetres; length of the setaceous spines in front, ·5 millimetre.

This minute form agrees very well with the characters such as a young form of Siphonotreta Scotica, Davidson, and its Canadian variety might assume or be expected to have from an examination made of many adult individuals collected in the Utica of Gloucester, near Ottawa, but there is also a very close resemblance between the Murray Bay specimen and the *Siphonotreta micula* described by Prof. McCoy[1] from the Llandeilo rocks of Great Britain, and which he himself recognized afterwards in rocks of similar age in Australia. Dr. Bigsby, in his "Thesaurus Siluricus," states that *S. micula*, McCoy, occurs in Meath, Ireland, England and S. W. Scotland, at Glenkiln, Dumfrieshire, and in several localities in Wales. The Murray Bay specimen differs from *S. micula* in having the concentric lines of growth or striæ more distant, there being only *twelve* in the space of one millimetre, whilst there are are said to *seventeen* in the same space in the latter. The spines, again, are comparatively longer in the Murray Bay form than in *S. Scotica*, but much more numerous than in *S. micula*. They are exceedingly slender and smooth. The specific relations of this form require better specimens before definite conclusions are arrived at.

5. LEPTÆNA SERICEA, Sowerby.—Only a fragment of what appears to be this ubiquitous and common species occurs in the collection.

6. ORTHIS TESTUDINARIA, Dalman, var.—This species of Orthis resembles one which is found in tolerable abundance in the limestones at the foot of the Montmorency Falls, near Quebec. It is here provisionally referred as a variety of *Orthis testudinaria*, though there is good reason for a different specific designation. The costæ, especially about the beak and along the anterior margin, differ considerably as to their arrangement and distribution.

CEPHALOPODA.

7. TROCHOLITES AMMONIUS, Conrad.—The mode of occurrence, preservation and characters of the specimen referred to this species agree perfectly with the numerous individuals occurring in the Utica shales of Whitby, Ottawa and Collingwood.

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[1] British Palæozoic Fossils, pp. 188 and 189; Pl. 1 H. fig. 3.

8. **Endoceras proteiforme**, Hall.—As is usually the case, with nearly all the specimens collected of this species in the Utica, the shells are flattened and broken, showing that it was exceedingly thin and brittle. There are four cepta in the space of 3·5 centimetres.

Trilobita and Ostracoda.

The trilobites and bivalved crustaceans mentioned in the list (*supra*) have been determined with as much acculracy as the state of preservation of the specimens warrants. When more specimens are obtained, and some more perfect ones than those before me, the relations, both generic and specific, may be changed, and a number of additional species recorded from that outcrop of the Utica at Murray Bay.

It may not be deemed out of place here to point out the entire absence of those species of fossils which characterize the so-called Utica shales along the south shore of the St. Lawrence, and on the northern side of the Island of Orleans. The geological horizon indicated by the fossils contained in this brief note is evidently that of the Utica formation. Nearly every species mentioned occurs in that formation at Ottawa and Whitby, in Ontario; so that the exposures of this formation at Murray Bay may be said to be the most easterly outcrop visible of the Utica on the north shore of the St. Lawrence.

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